

Remarks/Arguments:

This is a reply to the office action of December 20.

All claims were rejected as indefinite for the way in which the ratio of equivalents was stated. To overcome this ground of rejection, we have amended claims 21 - 24 and 33, using language suggested by the examiner.

Claims 21 - 27 and 31 - 37 were also rejected over prior art. The examiner is asked to reconsider the rejections, taking into account the following remarks.

Novelty

Claim 21 - 27 and 31 - 32 were rejected as anticipated by Clemens. In this respect, we provided with our last amendment a declaration from Dr. Eisele, one of the inventors of the present application. Surprisingly, the examiner has responded to our comprehensive analysis of Clemens in a single sentence, from which we understand the examiner holds the view that the terpene-phenolic resin used in Clemens is reactive. We have not disputed that the terpene-phenolic resin SYLVARES TP 2019 is a reactive compound. With respect, however, this is not the point. For a finding of anticipation it would have to be established that the terpene-phenolic resin actually reacts with the other components in order to form a polyurethane resin according to claim 21.

In order to give a simple example: oxygen is known to be a highly reactive element. Nevertheless, about a fifth of the air we breathe consists of oxygen. In other words, in common air there is a substantial amount of the highly reactive oxygen, i.e. of oxygen which has not reacted with any partner. This clearly shows that inherent reactivity of a compound does not lead to the compulsory conclusion that the compound has actually

reacted. First of all, in order for a reaction to take place there has to be a reaction partner. Moreover, there have to be appropriate conditions for a reaction to take place. It is well-known and basic fact of chemistry that not every reaction which could principally take place actually does takes place: for example, some reactions require the presence of a catalyst in order to take place. Other reactions require heating etc.

To sum up, the mere fact of reactivity of a compound is not sufficient enough for a finding that the compound actually will react in a given situation. A careful consideration of the entire facts should be made.

As far as Clemens is concerned, the declaration of Dr. Eisele shows that there is no reaction partner with which the terpene-phenolic resin could actually react. Indeed, even the most reactive compound cannot engage in a reaction if there is no appropriate reaction partner. Dr. Eisele has convincingly shown in his declaration by means of stoichiometric calculations that there is no reaction partner for the terpene- phenolic resin in order to produce a polyurethane resin according to claim 21.

Moreover, in our opinion Clemens makes it clear that no such reaction actually takes place: in example 37, column 35, lines 12 to 17, it is clearly stated that NIREZ 2019 (the old name was SYLVARES TP 2019) was mixed with the prepolymer made in part I. There is no statement whatsoever in Clemens that a reaction actually took place.

Under these circumstances, applicant respectfully traverses the examiner's assumption of inherent anticipation of the present invention by Clemens. Dr. Eisele's declaration shows that the assumption is not correct. A more detailed explanation of why Dr. Eisele is deemed wrong would be appreciated, if the rejection is maintained.

Nonobviousness

Claims 21 - 27 and 31 - 37 were also rejected as obvious over Clemens in view of Reid. In making this argument, the examiner admits that no reaction of diisocyanate, polyesterpolyol, polyetherpolyol and reactive terpene-phenolic resin was taught by Clemens, a position which seems opposite to that taken in the anticipation rejection discussed above. Clarification of this apparent inconsistency would be appreciated.

Assuming that there is no reason to conclude that the reaction discussed above actually occurs, the skilled man could not draw an explicit suggestion from Clemens pointing in the direction of the present invention. Moreover, Clemens does not suggest the use of a polyurethane resin according to the present invention as a binder material in coating compositions such as printing inks, let alone that the use of this specific polyurethane resin would solve the problem underlying the present invention as formulated on page 3, first paragraph of the original specification.

The above deficiencies of Clemens, in our view, cannot be remedied by combining Clemens with Reid. First of all, Reid is related to a completely different technical field, i.e. reactive hot melt adhesives. Hot melt adhesives have nothing to do with coating compositions such as printing inks which are the subject matter of the present invention. For example, whereas printing inks are conventionally used at room temperature, which is well-known, hot melt adhesives are used at elevated temperatures, as indicated by their name. Hot melt adhesives are applied at a temperature exceeding their melting point, which is why hot melt adhesives are solvent-free. Actually, the compositions in Reid do not have any solvent component. To the contrary, and this is explicitly stated in claim 35, the coating composition of the present invention comprises a solvent. We submit that the skilled man would have considered a hot melt adhesive for the purposes of the present invention.

Secondly, the examiner's assumption that Reid teaches the insertion of a reactive tackifying compound into the backbone of the polyurethane resin which is described in Reid fails for the above reasons discussed with respect to Clemens. There is no clear teaching in Reid that the reactive tackifying resin actually reacts with the isocyanate component. Quite to the contrary, in column 8, line 2 to 10 it is clearly stated that an excess of isocyanate is used such that the resulting pre-polymer has residual NCO groups. Especially in column 8, lines 9 to 10 it is clearly stated that an OH:NCO ratio of about 0,75 to 0,16 to 1 is used in order to obtain an NCO concentration in the final adhesive of about 1 to 5%. Note that the present claims require the reaction of all isocyanate groups of the diisocyanate to take place. In other words, Reid teaches a different polyurethane resin than the present invention. This is not surprising, since in a hot melt adhesive a curing step has to take place later on, and that step requires the presence of free NCO groups. This is derivable from Reid, column 7, lines 15 to 17, where it is stated that the subsequent curing reaction occurs between a compound having an available active hydrogen atom and the NCO groups of the polyurethane precursor. This statement clearly implies that first of all the prepolymer has free NCO groups - in contrast to the polyurethane resin of the present invention. Secondly, the statement also implies that the free NCO groups have not reacted with the reactive tackifying compound which is also present.

In Reid's disclosure, there is no statement whatsoever that the tackifying resin reacts under formation of a polyurethane resin. Quite to the contrary, if one looks at column 6, line 63 to column 7, line 5, one sees that the reactive hot melt urethane adhesives of Reid typically comprise:

- an effective bonding amount of a thermoplastic polymer base to provide initial green strength;
- an effective amount of a polyurethane composition including the reaction product of a polyester polyol compound;
- an isocyanate compound to provide final cured strength and chemical and heat

resistance;

- a reactive tackifying resin to provide increased open times and increased PAFT values; and
- a compatible tackifying resin.

From this passage from Reid, a person of ordinary skill would not deduce that a reaction has occurred between the isocyanate compound, the polyester polyol compound and the reactive tackifying resin. This passage actually states that the polyurethane composition is a reaction product of two components, i.e. the polyester polyol compound, and the isocyanate compound. These components are designated with reference numbers (i) and (ii), which is not the case with respect to the reactive tackifying resin.

We submit there is no language in Reid stating that a reaction of the reactive tackifying resin with the isocyanate or polyol compound to form a polyurethane resin takes place.

To summarize: the mere statement that a component is reactive by no means is the same as stating that such a reaction has actually taken place, let alone with which reaction partner a reaction has taken place. Therefore, in our opinion the rejections are based on understandable but impermissible hindsight speculation. We have identified clear pointers from both Clemens and Reid that no such reaction under formation of a polyurethane resin of the present invention takes place in the prior art. For these reasons, we respectfully submit that the claims presented are not rendered obvious by a combination of Clemens and Reid, and that the claims now presented are patentable over the prior art, and in proper form for allowance.

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